Establishing postgraduate biosafety programs at African universities

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• Does Africa really need such a programme?

• What would be a suitable curriculum?

• What would be the employment opportunities for the graduates?

• What progress has been made so far?

• What remains to be done?
Questions?

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University of Nairobi - Stakeholder needs assessment

- Africa Harvest Biotech Foundation International;
- African Agricultural Technology Foundation;
- African Biotechnology Stakeholders Forum;
- College of Biological and Physical Sciences, University of Nairobi,
- Finlays (Dudutech) Ltd;
- Fresh Produce Exporters Association of Kenya;
- International Livestock Research Institute;
- International Service for the Acquisition of Agribiotech Applications;
- Jomo Kenyatta University of Agriculture and Technology;
- Kenchic Ltd.;
- Kenya Agricultural and Livestock Research Organization;
- Kenyatta University;
- Ministry of Agriculture, Livestock and Fisheries;
- Ministry of Education;
- National Biosafety Authority;
- National Commission for Science Technology and Innovation;
- National Environmental Management Agency;
- Pest Control Products Board;
- Program for Biosafety Systems;
- Syngenta Ltd.;
- Veg-Pro Ltd.
Does Africa really need such a programme?
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- The three main core businesses for biosafety stakeholders are research, training & regulatory services;
- 73% of biosafety graduates go into full employment, with 45% being involved in training;
- The 21 organisations interviewed utilise graduates of biosafety;
- Half of the institutions had employed 3-5 graduates of biosafety;
- There are no stand-alone biosafety programmes & thus biosafety issues are generally covered within other related courses;
- 23% of biosafety graduates employed have been trained outside the country – Michigan State University (USA), University of Ghent (Belgium), University of Ancona, (Italy), University of Guelph (Canada), Makerere University (Uganda), and South China University (China).
Does Africa really need such a programme?

- **ICGEB** supported 14 (University of Aberystwth) and 18 (Univ. of Melbourne) -32 in 9 years

- 91% of the stakeholders indicated the need for MSc training in biosafety.

- Such training would be very valuable, if it imparted skills on: environmental safety; biosafety legal frameworks; food & feed safety; ethics; &, biosafety communication & awareness.

- It would be most prudent to offer such training to those already trained & working in related fields.

- Even with a Master programme on offer, complimentary short training courses on biosafety would also be useful.
Does Africa really need such a programme?
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- Department of Plant Science and Crop Protection, University of Nairobi
- NEPAD African Biosafety Network of Expertise,
- University of Melbourne, Australia;
- International Centre of Genetic Engineering and Biotechnology,
- Office of the Gene Technology Regulator, Australia,
- Programme for Biosafety Systems,
- West Africa Centre for Crop Improvement,
- Ghana National Biosafety Authority,
- University of Ghana.
Does Africa really need such a programme?
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• **What would be a suitable curriculum?**

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What would be a suitable curriculum?

- Postgraduate training programme need not only to deal with matters pertaining to GMOs but also issues of relevance to biosecurity, public health, natural resource management, biocontrol & bioremediation.

- It is necessary to put GMOs in the context of assessing & managing risk from any type or use of an organism & hence a broad biosafety curriculum would be most ideal.
What would be a suitable curriculum?

Upon completion students should;

- understand the **fundamentals of biosafety & biosecurity**

- acquire the experience to critically examine, synthesise & evaluate knowledge across a broad range of disciplines

- have the ability to **apply risk analysis** in practical ways to address biosafety & biosecurity issues
Questions?

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• **What would be the employment opportunities for the graduates?**

• What progress has been made so far?

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What would be the employment opportunities for the graduates?

Regulation;
Quarantine/biosecurity;
Public health;
Natural resource management;
Product development;
Quality control in agricultural, food and beverage companies, hospitals, education/universities, or research organisations
Questions?

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• **What progress has been made so far?**

• What remains to be done?
What progress has been made so far?
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- Biotechnology for Biosafety Professionals
- Principles of Biosafety and Biosecurity
- Biometry and Research Methods and Scientific Communication
- Containment of Organisms
- Biosafety for Gene Technology and GMOs
- Risk Analysis (Assessment, Management & Communication)
- Biosafety Regulatory Frameworks
- Biosafety Decision Making
- Legal Aspects of Biosafety
- Food and Environmental Biosafety
- Biosecurity and Bioterrorism
- Health Biosafety
What progress has been made so far?

- Online training modules under development for at least five of the courses....
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What remains to be done?

- **Approve course** by one or more universities
- **Lobby for additional (funding) partners**
- **Lobby government & local institutions for support** and involvement
- Develop **more course materials**
- **Select candidates** for the course
- **Scholarship** offers
- **Salary top-ups** for staff teaching course
End of Presentation